Mine Gas Questions and Answers I
120 Questions

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1. The explosive range of methane is _____.

    A. 2% to 10%
    B. 2% to 15%
    C. 5% to 15%
    D. 5% to 10%

2. A flame safety lamp will go out when the oxygen percentage falls below _____.

    A. 19.5%
    B. 17.0%
    C. 16.5%
    D. 16.0%

3. The explosive range of carbon monoxide is _____.

    A. 5% to 15%
    B. 4.5% to 74%
    C. 12.5% to 74%
    D. carbon monoxide is not explosive

4. Hydrogen sulfide is a gas that smells like rotten eggs.

    A. True
    B. False

5. The specific gravity of carbon dioxide is _____.

    A. 0.555
    B. 0.967
    C. 1.192
    D. 1.529

6. The ignition temperature of carbon monoxide is 1380 degrees F.

    A. True
    B. False

Mine Gas Questions and Answers I
120 Questions

7. Carbon monoxide unites with the _____ of the blood.

    A. red blood cells
    B. white blood cells
    C. hemoglobin
    D. platelets

8. _____ of carbon monoxide will produce symptoms of unconsciousness in 30 minutes.

    A. 200-300 ppm
    B. 400-600 ppm
    C. 1000-2000 ppm
    D. 2000-3000 ppm

9. Workers should NOT be employed for a period of 8 hours where the carbon monoxide content exceeds _____.

    A. 5 ppm
    B. 10 ppm
    C. 50 ppm
    D. 100 ppm

10. The least percentage of methane that can be detected with a flame safety lamp is _____.

    A. 0.25%
    B. 0.50%
    C. 1.00%
    D. methane cannot be detected with a flame safety lamp

11. The specific gravity of methane is _____.

    A. 0.555
    B. 0.967
    C. 1.192
    D. 1.529

12. Methane needs to have oxygen present to be explosive.

    A. True
    B. False

Mine Gas Questions and Answers I
120 Questions

13. Maximum explosive violence of methane is at _____.

A. 5%
B. 8%
C. 10%
D. 15%

14. No explosion of a methane-air mixture can occur if the oxygen level falls below _____.

A. 19.5%
B. 16.0%
C. 14.5%
D. 12.0%

15. When a methane explosion unites with coal dust, it becomes less violent.

A. True
B. False

16. In a mine environment, methane is most likely to be found _____.

A. near the bottom
B. near the roof
C. in return areas only
D. in intake areas only

17. _____% of carbon monoxide can cause death in less than one hour.

A. 4.0%
B. 0.4%
C. 2.0%
D. 0.2%

18. How does oxides of nitrogen cause death?

A. cause fluids to be built up in the lungs
B. combines with hemoglobin in the blood
C. causes massive bleeding
D. creates air embolisms in the bloodstream

Mine Gas Questions and Answers I
120 Questions

19. Which is NOT a source of hydrogen in coal mines?

A. mine fires
B. explosions
C. charging batteries
D. rotting timber

20. The chemical symbol for methane is _____.

A. H_2S
B. CH_4
C. N_2
D. N_2S

21. The chemical symbol for hydrogen sulfide is _____.

A. H_2S
B. CH_4
C. N_2
D. N_2S

22. What percentage of the earth's atmosphere is oxygen?

A. 78.09%
B. 16.50%
C. 4.25%
D. 20.94%

23. What percentage of the earth's atmosphere is nitrogen?

A. 78.09%
B. 16.50%
C. 4.25%
D. 20.94%

24. If two or more gases mix uniformly, will they separate or come apart?

A. Yes
B. No

Mine Gas Questions and Answers I
120 Questions

25. The chemical symbol for carbon dioxide is _____.

A. CO
B. CH_4
C. CO_2
D. C_2H_4

26. What element in the air is essential to life?

A. hydrogen
B. nitrogen
C. helium
D. oxygen

27. The term black damp means _____.

A. moist air in a coal mine
B. oxygen deficient
C. after effects of a mine explosion
D. wet coal

28. Methane can be detected by _____.

A. chemical analysis
B. CH_4 detector
C. all of the above

29. The explosive range of carbon monoxide is _____.

A. 4.3% to 45%
B. 5% to 15%
C. 9% to 11%
D. 12.5% to 74%

30. _____ is a flammable mixture of methane and air which can either burn or explode when ignited.

A. blackdamp
B. whitedamp
C. firedamp
D. stinkdamp

Mine Gas Questions and Answers I
120 Questions

31. A sealed area of a coal mine after a period of time will be found to have the absence of _____.

A. nitrogen
B. oxygen
C. carbon dioxide
D. hydrogen

32. Oxides of nitrogen in coal mines are formed by _____.

A. rotting wood
B. charging batteries
C. use of explosives
D. none of the above

33. The ignition temperature of methane is _____.

A. 500 to 1500 degrees F
B. 900 to 1100 degrees F
C. 1100 to 1380 degrees F
D. 1100 to 1300 degrees F

34. The ignition temperature of carbon monoxide is _____.

A. 900 degrees F
B. 1100 degrees F
C. 1380 degrees F
D. carbon monoxide is not combustible

35. What is the specific gravity of hydrogen?

A. 0.0695
B. 0.555
C. 1.091
D. 1.529

36. The explosive range of hydrogen is _____.

A. 5% to 15%
B. 4.3% to 45%
C. 12.5% to 74%
D. 4.1% to 74%

Mine Gas Questions and Answers I
120 Questions

37. Hydrogen is detected by chemical analysis.

A. True
B. False

38. The principal poisonous gas produced by an explosion is _____.

A. methane
B. carbon monoxide
C. carbon dioxide
D. hydrogen sulfide

39. What percentage of carbon monoxide will produce slight symptoms after several hours?

A. 100 ppm (.01%)
B. 200 ppm (.02%)
C. 300 ppm (.03%)
D. 400 ppm (.04%)

40. What percentage of carbon monoxide will produce discomfort in 2 or 3 hours?

A. 400 ppm (.04%)
B. 600 ppm (.06%)
C. 800 ppm (.08%)
D. 1000 ppm (.1%)

41. The chemical symbol for carbon monoxide is _____.

A. CO
B. C_2O
C. CO_2
D. C_2O_2

42. What percent of carbon monoxide will produce a tendency to stagger in 90 minutes?

A. 1000 ppm (.1 %)
B. 1200 ppm (.12%)
C. 1400 ppm (.14%)
D. 1600 ppm (.16%)

Mine Gas Questions and Answers I
120 Questions

43. What percentage of carbon monoxide will render a person unconscious in 30 minutes?

A. 1200 to 1600 ppm (.12% to .16%)
B. 1600 to 2000 ppm (.16% to .2%)
C. 2000 to 2500 ppm (.2% to .25%)
D. 2500 to 3000 ppm (.25% to .3%)

44. How much greater affinity does hemoglobin have for carbon monoxide than oxygen?

A. 100 times
B. 200 times
C. 300 times
D. 400 times

45. Why are small amounts of carbon monoxide injurious?

A. a small amount can build up a large amount of fluid in the lungs
B. carbon monoxide is not easily dispelled from the bloodstream
C. a small embolism in the bloodstream can kill
D. a small amount can cause a massive hemorrhage

46. The specific gravity of carbon monoxide is _____.

A. 0.967
B. 1.091
C. 1.529
D. 1.259

47. Carbon monoxide can be detected with a flame safety lamp.

A. True
B. False

48. Carbon monoxide is colorless, odorless, tasteless, combustible and poisonous.

A. True
B. False

Mine Gas Questions and Answers I
120 Questions

49. Workers should NOT be employed for a period of 8 hours where the carbon monoxide level exceeds _____.

    A. 25 ppm (.0025%)
    B. 50 ppm (.005%)
    C. 75 ppm (.0075%)
    D. 100 ppm (.01%)

50. What percent of carbon monoxide might produce symptoms of poisoning if breathed indefinitely?

    A. 0.01%
    B. 0.02%
    C. 0.03%
    D. 0.04%

51. Carbon monoxide is the product of incomplete combustion.

    A. True
    B. False

52. Convert 0.01% of carbon monoxide to ppm.

    A. 10 ppm
    B. 100 ppm
    C. 1000 ppm
    D. 10000 ppm

53. What percentage of blood saturation by carbon monoxide will cause death?

    A. 5% to 15%
    B. 30% to 40%
    C. 60% to 70%
    D. 70% to 80%

54. What is the specific gravity of methane?

    A. 0.555
    B. 0.967
    C. 1.091
    D. 1.529

Mine Gas Questions and Answers I
120 Questions

55. Methane is found in the coal seam and the surrounding strata.

    A. True
    B. False

56. There can be no methane explosion when the methane content is over 15%.

    A. True
    B. False

57. What is the percentage of oxygen below which no explosion of methane and air mixture can occur?

    A. 19%
    B. 15%
    C. 12%
    D. 10%

58. A greater percentage of methane is necessary to start an explosion in an atmosphere which contains less than the normal percentage of oxygen.

    A. True
    B. False

59. What effect does the presence of methane have upon the explosibility of coal dust?

    A. the coal dust is ignited less easily.
    B. the coal dust is more easily ignited and the force of the explosion is greater.
    C. methane does not affect the explosibility of coal dust.
    D. none of the above.

60. One cubic foot of methane is lighter than one cubic foot of air.

    A. True
    B. False

61. What gas is most likely found above a pillar fall?

    A. carbon monoxide
    B. methane
    C. carbon dioxide
    D. hydrogen sulfide

Mine Gas Questions and Answers I
120 Questions

62. Which gas can accumulate along the bottom in unventilated areas?

A. carbon monoxide
B. methane
C. carbon dioxide
D. hydrogen sulfide

63. Carbon dioxide is detected by _____.

A. feeling light headed
B. flame safety lamp
C. carbon dioxide detector
D. chemical analysis

64. Carbon dioxide is a colorless, odorless gas formed by the chemical combination of _____.

A. carbon and oxygen
B. carbon and dioxin
C. carbon and methane
D. none of the above

65. Carbon dioxide is a product of incomplete combustion.

A. True
B. False

66. Is carbon dioxide combustible?

A. Yes
B. No

67. What supports the chemical reaction that produces fires and explosions?

A. Carbon Monoxide
B. Carbon Dioxide
C. Oxygen
D. Hydrogen Sulfide

Mine Gas Questions and Answers I
120 Questions

68. What is the normal percentage of oxygen found in the atmosphere?

A. 79.2%
B. 20.9%
C. 19.5%
D. 17.0%

69. _____ is a tasteless, odorless and colorless gas that neither support life or combustion.

A. Oxygen
B. Hydrogen Sulfide
C. Nitrogen
D. None of the above

70. Where might accumulations of carbon dioxide be found?

A. along the roof line
B. at the face area
C. near the floor at inadequately ventilated places
D. near standing bodies of water

71. Carbon Dioxide is a product of complete combustion.

A. True
B. False

72. The specific gravity of carbon dioxide is _____.

A. 0.555
B. 0.967
C. 1.192
D. 1.529

73. There can be a mine fire without the presence of oxygen.

A. True
B. False

Mine Gas Questions and Answers I
120 Questions

74. _____ is a phenomenon by which gases mix by natural forces.

A. Stratification
B. Homodulation
C. Integration
D. Diffusion

75. CH_4, CO and H_2S are all explosive gases.

A. True
B. False

76. The gas which is generated from a storage battery is _____.

A. CH4
B. H2S
C. H2
D. N2

77. Any gas which is harmful to life when inhaled is an obnoxious gas.

A. True
B. False

78. What mine gas can be detected by odor?

A. sulfur dioxide
B. hydrogen sulfide
C. hydrogen dioxide
D. hydrogen monoxide

79. What does the presence of CO in a sealed mine indicate?

A. large amounts of water
B. methane liberation
C. a roof fall
D. a fire

Mine Gas Questions and Answers I
120 Questions

80. What is the specific gravity of hydrogen sulfide?

A. 0.555
B. 0.967
C. 1.191
D. 1.529

81. What is the explosive range of hydrogen sulfide?

A. 5% to 15%
B. 4.3% to 45%
C. 12% to 74%
D. 45% to 72%

82. The specific gravity of sulfur dioxide is _____.

A. 1.192
B. 1.529
C. 2.263
D. 3.074

83. A diffused atmosphere is easier to detect gases than a stratified atmosphere.

A. True
B. False

84. A person will breathe faster and deeper while working in ____% of O_2?

A. 79.2%
B. 20.9%
C. 19.5%
D. 17.0%

85. Is nitrogen combustible?

A. Yes
B. No

86. Nitrogen has no effect toward propagating an explosion.

A. True
B. False

Mine Gas Questions and Answers I
120 Questions

87. What is the ignition temperature of nitrogen?

A. 1100 to 1300 degrees F.
B. 1100 to 1380 degrees F.
C. 700 degrees F.
D. nitrogen has no ignition temperature

88. The threshold limit value for oxides of nitrogen is _____.

A. 5 ppm
B. 10 ppm
C. 50 ppm
D. 81 ppm

89. The threshold limit value of nitrogen is _____.

A. 5%
B. 10%
C. 50%
D. 81%

90. Mine air should NOT contain less than _____% O_2.

A. 19.5
B. 17.0
C. 16.5
D. 16.0

91. The threshold limit value of H_2S is _____.

A. 5 ppm
B. 10 ppm
C. 50 ppm
D. 81 ppm

92. What supports the chemical reaction that produces fires and explosions?

A. carbon monoxide
B. carbon dioxide
C. oxygen
D. hydrogen sulfide

Mine Gas Questions and Answers I
120 Questions

93. How is sulfur dioxide formed in a mine?

A. by burning coal containing pyrites
B. by rotting timbers and wooden pipes
C. by charging batteries underground
D. it is a by-product of methane

94. The specific gravity of sulfur dioxide is _____.

A. 1.529
B. 2.101
C. 1.191
D. 2.263

95. Sulfur dioxide is a harmless gas.

A. Yes
B. No

96. How is sulfur dioxide primarily detected?

A. smell
B. taste
C. sight
D. flame safety lamp

97. Is sulfur dioxide combustible?

A. Yes
B. No

98. The chemical symbol for sulfur dioxide is _____.

A. H_2S
B. SO_2
C. S_2O
D. H_2O

99. Hydrogen sulfide is a by-product of the use of explosives.

A. True
B. False

Mine Gas Questions and Answers I
120 Questions

100.Hydrogen sulfide is primarily detected by _____.

A. sight
B. smell
C. taste
D. flame safety lamp

101.The specific gravity of hydrogen sulfide is _____.

A. 1.191
B. 1.529
C. 2.263
D. 2.623

102.What is the explosive range of Hydrogen Sulfide?

A. 4.3% to 45%
B. 12.5% to 74%
C. 5% to 15%
D. 4.3% to 12.5%

103.Hydrogen sulfide is NOT poisonous.

A. True
B. False

104.Hydrogen sulfide is water soluble.

A. True
B. False

105.What is the chemical symbol for methane?

A. CO_2
B. CO
C. C_2H
D. CH_4

Mine Gas Questions and Answers I
120 Questions

106. What percentage of blood saturation by CO will cause death?

A. 10% to 20%
B. 40% to 50%
C. 70% to 80%
D. CO saturation will not cause death

107. What is meant by gas diffusion?

A. gases separate naturally
B. gases unite naturally
C. gases mix naturally
D. gases explode

108. The rate of gas diffusion varies directly as the square root of their specific gravity.

A. True
B. False

109. Which gas is generated from a storage battery?

A. H_2
B. H_2S
C. SO_2
D. SO

110. What two gases are non-explosive?

A. CH_4 and CO
B. CO_2 and CH_4
C. CO_2 and N_2
D. CO and N_2

111. Which explosive gases are found in bituminous coal mines?

A. CH_4, CO, and H_2S
B. CH_4, N_2, and CO
C. CO_2, CH_4, and N_2
D. H_2S, CO, and SO_2

Mine Gas Questions and Answers I
120 Questions

112.Is CH_4 poisonous?

A. Yes
B. No

113.Which gas has the lowest ignition temperature?

A. CH_4
B. H_2S
C. CO
D. N_2

114.What type of atmosphere would it be easier to detect a noxious gas?

A. stratified
B. diffused

115.The flame in a flame safety lamp will _____ when black damp is encountered.

A. burn brighter
B. go out
C. turn blue
D. do nothing

116.Stink damp refers to _____.

A. H_2
B. H_2S
C. SO_2
D. SO

117.Convert .01% of CO into ppm.

A. 1 ppm
B. 10 ppm
C. 100 ppm
D. 1000 ppm

Mine Gas Questions and Answers I
120 Questions

118.A gallon of water weighs _____.

A. 7.70 pounds
B. 7.50 pounds
C. 8.34 pounds
D. 8.53 pounds

119._____ is defined as the average atomic mass for a naturally occurring element.

A. atomic weight
B. nuclear weight
C. molecular weight
D. none of the above

120.There are _____ atoms in a molecule of hydrogen.

A. 2
B. 4
C. 8
D. 16